Business Roundtable Data Points

Nov. 2, 1994

• NASA has a tremendous role to play in bolstering U.S. economy/competitiveness. We are doing cutting-edge work in some markets with tremendous potential:

• Some experts estimate the global market for "green" technologies will reach $300 billion by the year 2000.

• U.S. information service expected to continue to be among the fastest growing sectors of the economy. Total revenues expected to climb more than 12% in 1994 to $136 billion.

• Cellular/personal communications market in U.S. expected to be nearly $17 billion in 1996.

• Biotech sales in the U.S. expected to reach $10 billion by 1998.

• U.S. satellite communications industry is a good example of successful NASA-industry cooperation. The U.S. now captures about 60% of the $8 billion world market in satellite communications.

• Current world market for remote sensing is about $800 million—expected to increase to $8 billion a year or more in the next decade.

• Virtual reality—market expected to reach slightly more than $430 million in 1995 (about 2% of the total multi-media industry). It's expected to top $1 billion by 1997.

Examples of how we're doing versus the competition in aviation:

• Main competition today is from Europe.

• U.S. aviation industry is vital to economic health—sales of about $100 billion a year. (We had 91% market share in 1969, about two-thirds today—mostly losses to Airbus)

• U.S. and Europe are about equal in new transport products. For example, 777 & A330/A340 aim at same market.

• We and the Europeans also are looking at the same next-generation products: new supersonic transport and New Large Aircraft (subsonic).

--If U.S. industry builds new supersonic airliner, potential $200 billion in sales, 140,000 new jobs.

• U.S. is far behind in transports carrying 100 passengers or fewer. Market dominated by Europeans.

--MD-95 and Boeing 737-XXX address the upper end of market, but are still conceptual. Boeing also studying concepts for regional jet transports.

• U.S. is far behind in modern test facilities; American manufacturers go to European tunnels to obtain the test conditions they need.

--The proposed new wind tunnels could help correct that situation.

• In general, the U.S. is slightly ahead in developing new technology; greater investment than Europe in HSCT technology, some propulsion and airframe technologies.

• Europeans are ahead in applying new technology to products, e.g., winglets, fly-by-wire systems, glass cockpits.

Future Competition

• Next arena for competition will be in the "process technologies": manufacturing methods, reducing design cycle time and time-to-market.

--Applying these technologies is the key to winning the battle.

--U.S. may be able to convert some of these technologies that had high DoD activity to civilian use.

• New major competitor: some combination of Pacific Rim nations and Russia. Combined, they can do things that none of the parties could do separately.

--Pacific Rim/Russia has a huge potential market, variety of investment capital, good design and production skills.

NASA Overrun Comparison

• A look at six major NASA programs shows how we're doing: new shuttle turbopump, AXAF, Cassini, TDRS-F7, EOS, X-ray Timing Explorer.

• There has been no upward growth on these programs since FY92. By reducing scope and implementing cost savings, AXAF cost has

come down almost 60% and X-Ray Timing Explorer almost 33% since FY92.

Cuts in Shuttle Ops Cost

• We recognize shuttle operations are too expensive, and we're doing something about it.

--From FY91 to FY92, ops cost went up $98.9 million

--From FY92 to FY93, cost still rose, but much less: $36.8 million

--From FY93 to FY 94, NASA cut the cost of shuttle ops by $537.4 million. We're now on the right track.

• At the same time, we're getting better at making the shuttle deliver on time.

--In FY92, only one of 7 missions took off on the date we'd scheduled 3-4 months before; same story in FY93, one of 7.

--In FY94, four of eight flight lifted off right on the predicted date. One other was delayed just 2 days due to engine inspections and weather.

Business Roundtable

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(1) Pleased to accept invitation / as time passed I was excited to have this opportunity

~~Know~~
NASA & US industry have ~~much in~~ goals in common

→ generate future sustained economic growth with an educated and inspired work force.

Gov't cannot perform task we can assist industry by appropriate regulatory ~~and~~ action, and perform tasks they normally would not pay for

Aircraft symbiotic relationship
- facilities
- tools
- competitive pre-competitive technology

Came to gov't concerned high tech. agency NASA with outstanding people headed in wrong direction with outdated policy & mgmt approach.

Needed customer focus

American Taxpayer
American Business
American Universities

Generate long term opportunity for future generations

- science & technology breakthrus
- safety net for national security
- Inspiration for young & old
  (Shumaker Levy 2 1/2 M
  (PS 93
- economic competitiveness
  - comm
  - info systs
  - aircraft
  - Biomed
  - Biotech
  - Green Tech
  - Remote Sense

Program in transition
Kennedy
83-92 3 X
92-95 .7 X

- Better Agency
- Customer Focus
- Performance base not resource base
- Accountability
- Balanced Program
  - new starts in S/C (industry led) (revolutionary)
  - HSCT
  - AST
  - NIH connection

Apollo Brute Force

- Miller 7±2
- adaptive system
- micromolecular surgery
- ultra reliability / ultra low cost

MEMS — spacecraft on chip

info systems — scientific Graphics; virtual reality 0.5 → 1.0

Aircraft — HSCT; AST; General Aviation

Biomed/Biotech

Space Station
A4A

Remote Sens.

process
mfg
design tools
facilities

→

cycle time

cost

performance based

ANTF 60% ↓
Shuttle ops